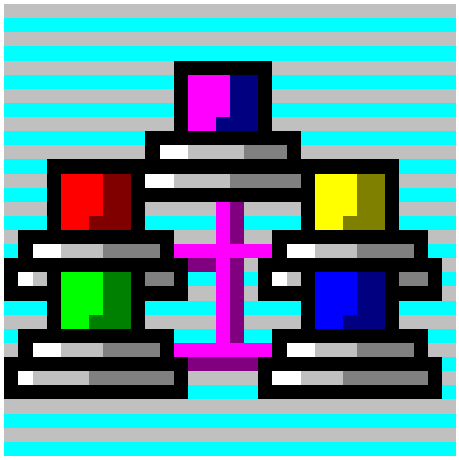
AccView®/Open

Management Software for

Accton's Switch Series

User's Guide

AccView



AccView®/Open

Switch Management Software

User's Guide for

Fast SwitcHub-8mi

Management Software

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This document was prepared on a networked personal computer with an Accton 100BASE-TX Ethernet adapter. The network was managed by AccView.

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About this Guide

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Welcome to AccView Switch Management software (version 3.x). This guide describes how to use the various management functions provided for Accton's manageable switch series (which currently includes the ES3508). Detailed instructions on how to use this program and practical examples make it easy for you monitor and control network connections and traffic down to the port level on the switch.

General Manual Coverage

This manual is your guide to using the switch management software provided in AccView/Open. It covers device management for the Fast SwitchHub-8mi SNMP.

Conventions Used in this Manual

This manual uses a variety of editorial and typographical conventions to help you easily locate and interpret information. These conventions are:

italics — Italicized words refer to keyboard keys you have to press, menu options you have to select to invoke an action, or a section in this manual or another manual you can consult for reference.

For example: *<Enter>*, *Reboot*

`Courier New` — Words shown in `Courier New` typeface are used to represent screen displays, file names, or commands you must enter to initiate an action.

Additional References

Other Documentation

This manual covers management software used for Accton's switch series products. Additional manuals are provided for the basic network management platform used in AccView/Open, Accton's EtherHub series products, and Accton's Commpass series products (which includes various bridges and the remote access server). If you have purchased any of these other Accton products, please refer to the relevant manual. The other manuals provided for AccView/Open include:

AccView/Open Network Management Software
AccView Commpass Management Software
AccView Hub Management Software

In addition, you may receive release notes containing new or updated information. If the information in a release note shipped with AccView/Open differs from the information in any of your guides, follow the instructions in the release note.

System Help

Help files may be accessed directly from AccView/Open via on-line help. To get help, select *Help* from the menu bar and then click on *Index*. Last-minute information regarding AccView has been recorded in the `README.TXT` file.

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This chapter describes AccView/Open switch management software for Accton's intelligent switch series. This program is an advanced Windows-based application which is integrated with the AccView/Open network management platform (V3.x) and uses SNMP (Simple Network Management Protocol) to manage Accton's Fast SwitchHub-8mi SNMP.

Management Overview

SwitchHub 3508

The SwitchHub Manager, used to manage Accton's Fast SwitchHub-8mi SNMP intelligent switch, can perform any of the the following tasks:

- Show basic information about a SwitchHub system
- Configure basic SNMP parameters (e.g., defining trap managers and community strings)
- Configure the system (e.g., IP parameters, Spanning Tree Algorithm, or port communication modes)
- Download new agent software
- Display system, port or spanning tree statistics

Basic Features

- Easy to install and user friendly
- Windows-based menu driven program
- Uses graphical icon-based user interface
- Uses Simple Network Management Protocol (SNMP)
- Includes TFTP Service for downloading new software
- Shows and modifies parameters defined in the standard MIB II (RFC 1213), portions of the Bridge MIB (RFC 1286), and several of Accton's private MIBs
- Switch parameters are accessed through a set of text-oriented dialog windows, which are organized in a series of pull-down menus for better functional grouping and easy access
- Allows the network manager to change the configuration of target switches, and includes the Spanning Tree Algorithm defined in IEEE 802.1d
- Displays the forwarding database of bridged addresses
- Monitors the status and traffic of the overall system, as well as port and bridging statistics, such as displaying the number of incoming local frames, and total incoming and outgoing (i.e., forwarded) frames

Getting Started

This section describes how to start the AccView SwitcHub Management program. It also tells what the program can do.

Before You Begin

The AccView switch management program is a Windows-based program. This manual assumes that you are thoroughly familiar with Microsoft Windows. If necessary, please refer to the Microsoft Windows User's Guide.

Menu options displayed at half itensity are inactive, and cannot be used with the selected item. Only options displayed at full itensity are currently available for use.

Accessing the Software

AccView Platform

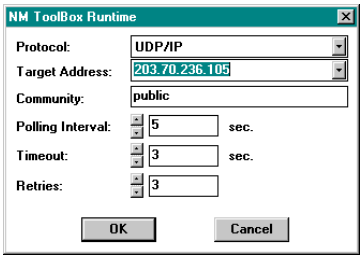
The standard way to access a switch management module is to first open the AccView platform and select the switch you want to manage from the network map. Double-click on the switch; or first select it, open the Tools menu, and select Zoom.

203.70.236.105

If your map has not yet been defined, then first add the required switch to the map, verifying that you have the correct address. For more detailed information on setting up your network map refer to the AccView/Open platform user's guide.

SwitchHub 3508

To access a switch management module directly from the Windows Program Manager, double-click on the switch management icon in the AccView program group.

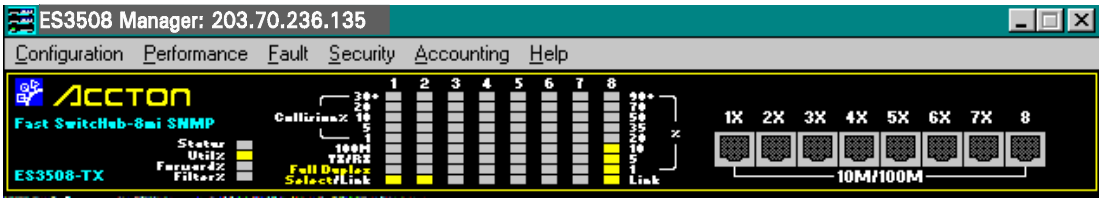


The dialog box for program initialization provides default values for every parameter. The address of the last device accessed by AccView is used for the Target Address. If this not the correct address, use Discovery to find the device you want to manage. Depending on your current configuration, you may need to provide any of the following information.

1. Specify the **Protocol** used for your network (UDP/IP, IPX or Ethernet).
2. Enter the **Target Address** of the hub.
3. Define a **Community** name describing the administrative relationship between SNMP entities (i.e., access rights).
4. Specify the **Polling Interval** between sending requests, the **Timeout** to wait for a response, and number of **Retries** to make contact.

Press **OK** to confirm your selections and enter the main window, or **Cancel** to exit the program.

SwitchHub Manager Command Interface



Fast SwitchHub-8mi with Integrated Management Device

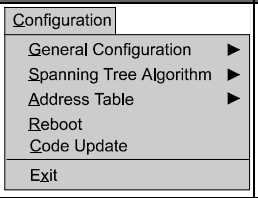
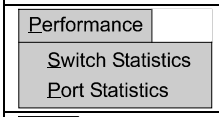
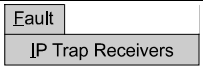
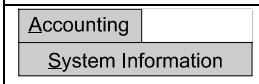
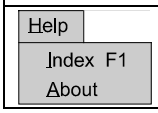
The main menu for the SwitchHub Manager shows a graphical representation of the switch you need to monitor. A real-time display of the selected device helps to manage the switch.

1. LEDs flash to reflect the real-time status of the actual LEDs on the units being monitored.
2. Select any port or the overall system by clicking on its graphic representation.
3. Double-click on any port or the switch to invoke the corresponding statistics window.

While running AccView, double-click on any SwitchHub object on the map or zoom in on any device (*Tools>Zoom*) to display the main menu for the SwitchHub Manager.

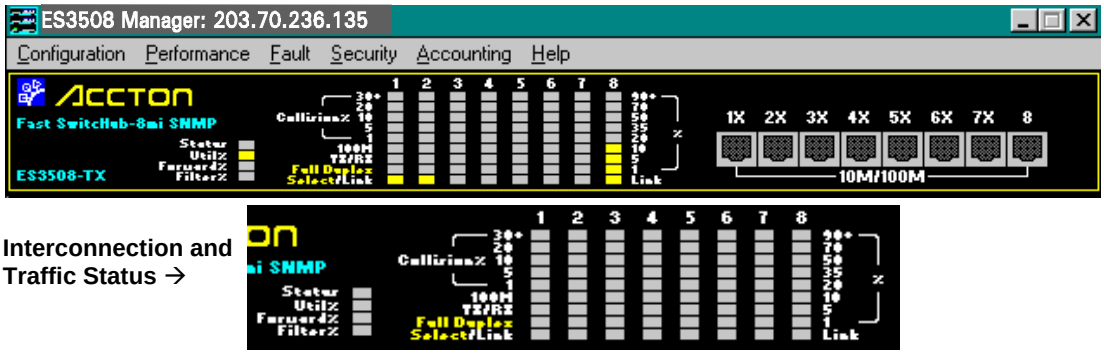
The SwitchHub Manager provides a menu bar above the stack display. The following table describes each menu and the associated commands.

Menu Interface Description

Menu	Name	Description
	Configuration	The Configuration Menu provides access to the system's basic configuration, including hardware/firmware versions, IP settings, Spanning Tree configuration, and the address table. This menu also allows you to reboot the system, update the on-board firmware, or exit the management program.
	Performance	The Performance Menu shows Ethernet and bridge statistics for the overall switch or a selected port. This menu can be very helpful in checking for error trends.
	Fault	The Fault Menu is used to designate trap managers. These stations will receive trap messages from the SwitcHub Agent as defined in MIB II, the Repeater MIB (RFC 1516), and Accton's private MIB.
	Security	The Security Menu allows the system administrator to set community strings and define corresponding access rights.
	Accounting	The Accounting Menu provides a description of the SwitcHub Agent, and includes several fields where you can enter contact information for the individual responsible for maintaining this system.
	Help	The Help Menu includes *Index* and *About*. This menu provides on-line Help for the network administrator and displays copyright information about the SwitcHub Manager program.

Graphical Display of the Fast SwitchHub-8mi

The following illustration depicts the significant parts of the Fast SwitchHub-8mi graphical display.



Interconnection and Traffic Status →

Description of Display Status Indicators

Label[1]	Description	Indications
Status	Port status display (1)	ON - Port status display mode is active
Util%	Port bandwidth utilization (2)	ON - Port utilization display mode is active
Forward%	Port forwarding ratio (2)	ON - Port forwarding display mode is active
Filter%	Port filtering ratio (2)	ON - Port filtering display mode is active

1 - These display modes can only be selected with the Configure button.

Port status and duplex configuration Indicators (1) →

Description of Indicator Array

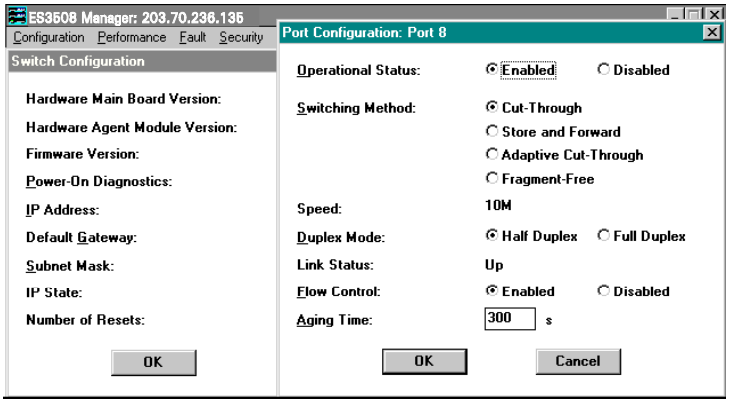
Label	Description
Collision	Indicates the percentage of packet collisions occurring out of the total packets transmitted by the port.
100M	This indicator is lit if the port is set at 100 Mbps.
TX/RX	This indicator flashes if the port is transmitting or receiving packets.
Full Duplex	This indicator is lit if the port is set for full-duplex operation.
Link	This indicator is lit if a valid link exists on this port.

Quick Guide

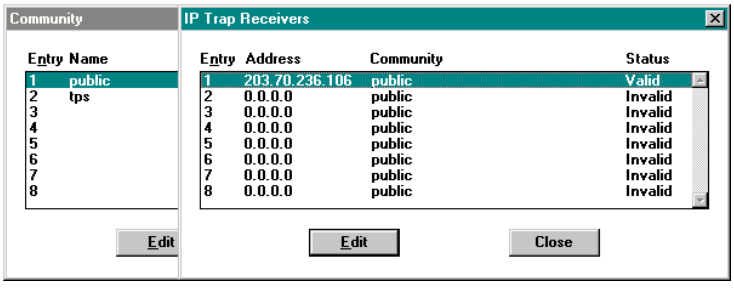
Basic Functions of the SwitcHub Manager

Using the SwitcHub Manager, the network administrator can do the following things:

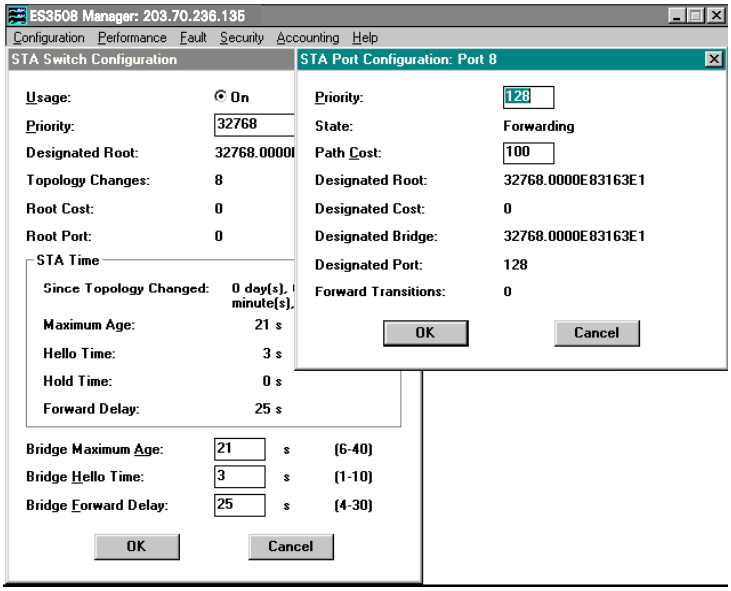
1. Configure the agent to change its IP address, subnet mask or default gateway, and enable power-on diagnostics or spanning tree algorithm. Select *Configuration>General Configuration>Switch* or *Configuration>General Configuration>Port.*



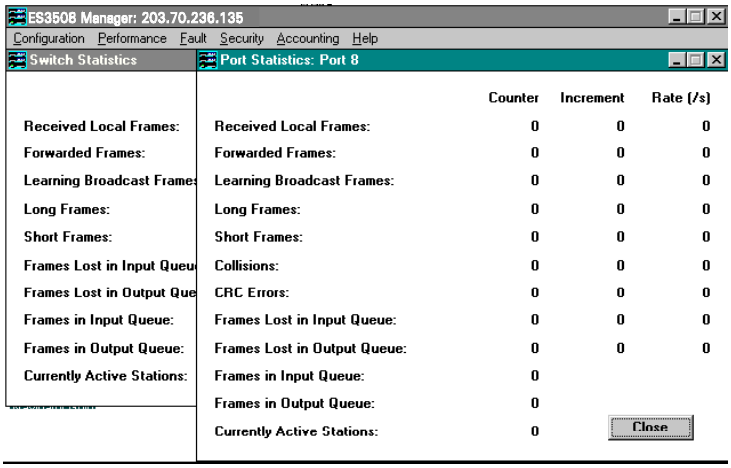
2. Set the community name (i.e., the access string for Network Management Stations), and trap managers (i.e., the IP address of management stations designated to receive trap messages). Select *Security>Community* or *Fault>IP Trap Receivers*.



3. Configure parameters for the Spanning Tree Algorithm by assigning switch or port priorities, or by adjusting the maximum age, hello time and forward delay for bridging. Select *Configuration>Spanning Tree Algorithm>Switch* or *Configuration>Spanning Tree Algorithm>Port.*



4. Display real-time statistics for the overall switch or for a selected port, including variables such as filtered and forwarded frames, frames held in the input and output queues, collisions, and CRC errors. Select *Performance>General Statistics>Switch* or *Performance>General Statistics>Port.*


ES3508 Manager: 203.70.236.135
Configuration Performance Fault Security Accounting Help
Switch Statistics
Port Statistics: Port 8
Counter Increment Rate (/s)
Received Local Frames: 0 0 0
Forwarded Frames: 0 0 0
Learning Broadcast Frames: 0 0 0
Long Frames: 0 0 0
Short Frames: 0 0 0
Collisions: 0 0 0
CRC Errors: 0 0 0
Frames Lost in Input Queue: 0 0 0
Frames Lost in Output Queue: 0 0 0
Frames in Input Queue: 0
Frames in Output Queue: 0
Currently Active Stations: 0
Close

5. Other things you can do with the SwitcHub Manager include displaying a general description of the switch, downloading new firmware, or rebooting the system. Select *Accounting>System Information, Configuration>Code Update* or *Configuration>Reboot.*

SwitchHub Manager Menu System

The SwitchHub Manager provides various management menus. Clicking on each item in the menu bar will open a pull-down menu, which displays related commands. The following is a brief description of each menu:

Configuration

When the switch is selected, you can configure IP protocol. When a port is selected, you can select the scheme used for processing data frames, specifying communication mode, or enabling/disabling flow control. This menu is also used to configure the Spanning Tree Algorithm for the switch or a selected port, view the address tables, reboot the system, update system firmware, or exit the SwitchHub Manager. It includes the following commands:

- General Configuration>Switch: Enables/disables power-on diagnostics, sets the IP address, subnet mask, default gateway, and displays the system hardware and firmware versions.
- General Configuration>Port: Enables/disables the selected port, selects the data processing scheme, communication mode (i.e., half or full duplex), flow control and aging time. Also displays the port's link state and communication speed.
- Spanning Tree Algorithm>Switch: Displays the designated root, the corresponding root cost, and the root port used by this switch. Shows the maximum age, hello time, hold time and forward delay currently in use by the protocol. Also shows the values used by this switch when bidding to become the root bridge.
- Spanning Tree Algorithm>Port: Defines port priority and path cost. This menu also displays the current state (e.g., listening, learning and forwarding), and information on the

designated root, designated path cost to the root, designated bridge within the local LAN, and the designated port on this switch. Also shows the number of times this port has transitioned to the forwarding state.

- Address Table: Shows node addresses and the associated port learned by the switch or the selected port.
- Reboot: Performs a warm reset.
- Code Update: Downloads binary files into the agent, allowing easy upgrade of agent firmware.
- Exit: Leaves the SwitcHub Manager program.

Performance

The Performance Menu allows you to display Ethernet or transparent bridge statistics for the overall switch or for a selected port.

- Statistics>Switch: Displays statistics on filtered and forwarded frames, the number of frames held in the input and output queues, as well as a count of the frames lost due to queue overflow and several common Ethernet errors.
- Statistics>Port: Shows the number of frames discarded by this port due to excessive transit delay through the switch (i.e., lost in queue), and the number of frames discarded by this port due to an excessive size (i.e., long frames). Also shows the total number of frames received from and transmitted onto the network by this port.

Fault

The Fault Menu is used to specify management stations that will receive trap messages from the SwitcHub agent.

Security

The Security Menu allows you to protect your system from unauthorized access by setting the SNMP community string and associated access rights.

Accounting

The Accounting Menu displays a basic description of the system, including device identifier, MIB identifier, system up time, and contact information.

Help

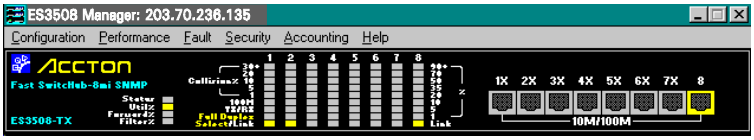
The Help Menu allows you to access on-line help for operating AccView. It also displays copyright information and the current SwitcHub Manager version number.

Graphic Interface

This section briefly describes the basic menus used to control the SwitchHub.

Menu Screen Parts

The Main Screen shows the menu bar along with a graphical representation of the SwitchHub.



Title Bar

The title bar for the SwitchHub interface shows the program name (i.e., ES3508 Manager) and the Management Agent's network address.

Menu Bar

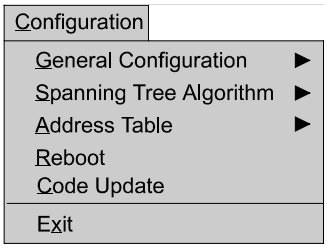
Displays available options for the currently displayed menu:

Menu	Description
Configuration	General Configuration, Spanning Tree Algorithm, Address Table, Reboot, Code Update, Exit
Performance	Switch Statistics, Port Statistics
Fault	IP Trap Receivers
Security	Community
Accounting	System Information
Help	Index and About

Main Window

This is where the SwitchHub is depicted by a virtual image that reflects the current status of each LED and port connection. This is also where the status windows and dialog boxes are displayed when various commands are invoked.

Configuration Menu

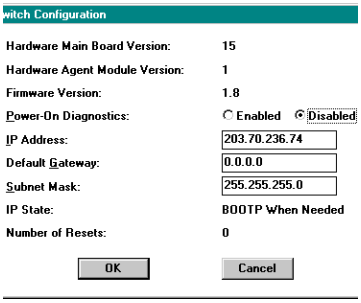


Defines parameters for establishing SNMP communications.
Configures parameters used to participate in a spanning tree network.
Displays node addresses stored in the switch and port tables.
Allows you to performs a warm restart.
Allows you to update system firmware from the TFTP server.
Exits the SwitchHub Manager.

Performing Basic Configuration

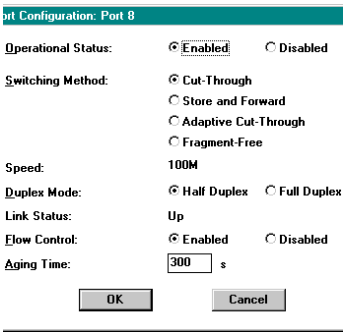
Select *General Configuration>Switch* to configure switch parameters including power-on diagnostics, Spanning Tree Algorithm (STA), or Internet Protocol (IP). Select *Basic Configuration>Port* to configure port parameters including manual partition, switching scheme, communication mode, and flow control.

Basic Switch Configuration



Click on any portion of the switch's panel (other than the ports), to highlight the switch. Then use the *Switch* command under General Configuration to display or modify current values for the switch. Power-on diagnostics for the switch can take up to 50 seconds. Use this dialog box to disable diagnostics if required. To ensure proper access to the switch by network management software based on IP protocol (e.g., AccView/Open), you need to provide an IP Address, Subnet Mask, and Default Gateway.

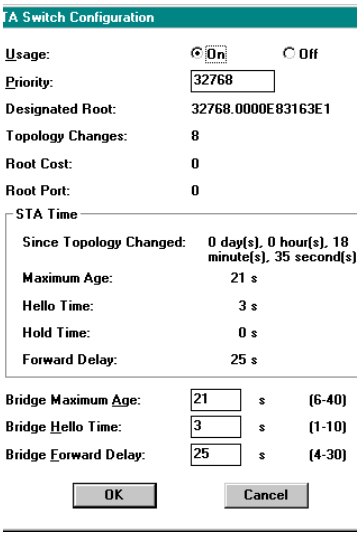
Parameter	Description
Hardware Main Board Version	Hardware version number of the main board.
Hardware Agent Module Version	Hardware version number of the agent module.
Firmware Version	Firmware version number of the agent module.
Power-on Diagnostics	Enables or disables power-on diagnostics.
IP Address	IP address of the agent you are managing. The SwitchHub system may be run on SNMP protocol over UDP/IP transport protocol. In this environment, all systems on the Internet, such as network interconnection devices and Network Management Stations (e.g., the PC running AccView) are assigned an IP address.
Default Gateway	Default gateway used in passing trap messages from the SwitchHub agent to the management station.
Subnet Mask	Subnet mask of the agent you have selected. This mask identifies the host address bits used for routing to specific subnets.
IP State	Shows if the IP address is set by the Boot Protocol (BOOTP). Options include: *IP Disabled* - The switch will not process any IP or Address Resolution Protocol (ARP) frames it receives. It will not respond to SNMP, Ping, Telnet or ARP frames that are received. *BOOTP When Needed* - If a non-zero IP address has been stored in EEPROM, IP is enabled and will function immediately. However, if the IP address in EEPROM is zero (0.0.0.0), the switch will broadcast BOOTP requests to try to learn its IP address. This is the only IP action that will be performed until it receives a response. This is the default option. *BOOTP Always* - IP is enabled, but will not function until a BOOTP reply has been received. If a non-zero IP address is stored in EEPROM, it will be cleared to zero when the switch is booted.
Number of Resets	Number of times the switch has been reset since power on or system reset.



Basic Port Configuration

Highlight the port you want to access, and then use the *Port* command under General Configuration to display or modify the current configuration of the selected port. This dialog box allows you to manually disable (i.e., partition) a port, specify the processing scheme used to forward traffic passing through the port, set the communication mode to half or full duplex, enable/disable flow control, and set the aging time used to discard learned addresses stored in the port address table.

Parameter	Description
Operational Status	Indicates whether the port is enabled or disabled (i.e., manually partitioned).
Switching Method	Shows the method used for forwarding packets as Cut-Through, Store and Forward, Adaptive Cut-Through, or Fragment-Free. (See *Switching Methods* in Chapter 1 of the Fast SwitchHub-8mi Installation manual for a more detailed description of these methods.)
Speed	Shows if the port connection is operating at 10 or 100 Mbps. Port speed is automatically set to match the speed of the attached device.
Duplex Mode	Shows if the port is currently operating at full duplex or half duplex. Duplex mode defaults to auto-negotiation upon power-on, system reset, or whenever the port link is disrupted (e.g., when the cable is disconnected or the link signal is reset). (See *Communication Mode* in Chapter 2 of the Fast SwitchHub-8mi Installation manual for a more detailed description of duplex mode.)
Link Status	Shows if the port is currently connected to a device with an active network interface.
Flow Control	Allows you to enable or disable flow control . Flow control uses back pressure, which can eliminate frame loss by "blocking" traffic from end stations or segments connected directly to the switch when its buffers fill up.
Aging Time	Time (seconds) after which unused addresses are discarded from the port's address table.



Using Spanning Tree Algorithm

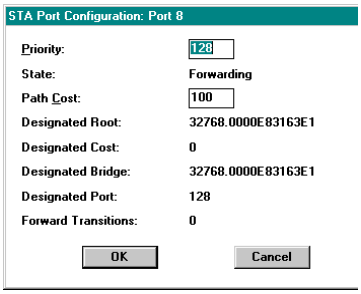
Select *Spanning Tree Algorithm>Switch* to configure STA parameters for the switch. Select *Spanning Tree Algorithm>Port* to configure STA parameters for the selected port.

STA Configuration for the Switch

Click on any portion of the switch's panel (other than the ports), to highlight the switch. Then use the *Switch* command under *Spanning Tree Algorithm* to assign node Priority, and to define the values that will be used by the spanning tree network if this device becomes the root node. This screen also displays the current values implemented for the spanning tree, including information about the current root and configuration timing. The default configuration for this switch should function well in most environments. However, if you need to adjust parameters for this algorithm, then be sure you understand the basic concepts behind the Spanning Tree Algorithm. (See *Using the Spanning Tree Algorithm* in Chapter 2 of the switch installation manual for more information on STA.)

Parameter	Description
Usage	Enables or disables the Spanning Tree Algorithm.
Priority	Device priority is used in selecting the root device, root port, and designated port. The device with the highest priority becomes the root device of the spanning tree. However, if all devices have the same priority, the device with the lowest MAC address will then become the root device. Enter a value from 0 to 65535. Remember that the lower the numeric value, the higher the priority.
Designated Root	The priority and MAC address of the current root device in the spanning tree.
Topology Changes	The total number of topology changes detected by this device since the management agent was last reset or initialized.
Root Cost	The cost of the path to the root as seen from this device.
Root Port	The number of the port which offers the lowest cost path from this device to the root node.
STA Time	*These values are currently in use by the spanning tree.*
Since Topology Changed	The time (in days, hours, minutes, seconds) since the last time a topology change was detected by this device.
Maximum Age	The maximum time (in seconds) a device can wait without receiving a configuration message before attempting to reconfigure. All device ports (except for designated ports) should receive configuration messages at regular intervals. Any port that ages out STA information (provided in the last configuration message) becomes the designated port for the attached LAN. If it is a root port, a new root port is selected from among the device ports attached to the network.
Hello Time	The interval (in seconds) at which the root device transmits a configuration message.
Hold Time	The interval during which no more than two configuration messages shall be transmitted by this node, in units of hundredths of a second.
Forward Delay	The maximum time (in seconds) the root device will wait before changing states (i.e., Listening to Learning to Forwarding). This delay is required because every device must receive information about topology changes before it starts to forward frames. In addition, each port needs time to listen for conflicting information that would make it return to a blocking state; otherwise, temporary data loops might result.
Proposed Values	*These values will be used by the spanning tree if this node becomes the root.*
Bridge Maximum Age	The maximum time (in seconds) a device can wait without receiving a configuration message before attempting to reconfigure. The minimum value is the higher of 6 or [2 x (Hello Time + 1)]. The maximum value is the lower of 40 or [2 x (Forward Delay - 1)].
Bridge Hello Time	The interval (in seconds) at which the root device transmits a configuration message. The minimum value is 1. The maximum value is the lower of 10 or [(Maximum Message Age / 2) -1].
Bridge Forward Delay	The maximum time (in seconds) the root device will wait before changing states (i.e., Listening to Learning to Forwarding). The minimum value is the higher of 4 or [(Maximum Message Age / 2) + 1]. The maximum value is 30.

STA Configuration for the Port



Click on any port, and then use the *Port* command under Spanning Tree Algorithm to assign port Priority or Path Cost. This screen shows whether or not the port has been manually disabled, and also displays the STA parameters currently used by this port, including designated root, designated cost, designated bridge, and designated port, as well as the number of times this port has transitioned into the forwarding state. (See *Using the Spanning Tree Algorithm* in Chapter 2 of the switch installation manual for more information on STA.

Parameter	Description
Priority	Defines the priority assigned to this port for use in STA. Note that if path cost for all ports on a switch are the same, the port with the highest priority (i.e., lowest value) will be configured as an active link in the spanning tree. Where more than one port is assigned the highest priority, the port with lowest numeric identifier will be enabled. The range is 0 - 255.
State	Indicates whether the port is in the Disabled, Blocking, Listening, Learning or Forwarding state.
Path Cost	This parameter is used by STA to determine the best path between devices. Therefore, lower values should be assigned to ports attached to faster media, and higher values assigned to ports with slower media. The default is automatically set (depending on the negotiated transmission speed) according to the following formula: Recommended Path Cost = 1000/(LAN speed in Mbps); i.e., default is set at 10 for Fast Ethernet or 100 for standard Ethernet. The range is 0 - 65535. Note: Path cost takes precedence over port priority.
Designated Root	The priority and MAC address of the current root device in the spanning tree.
Designated Cost	Path cost from the Designated Port (for the LAN segment connected to this port) to the root.
Designated Bridge	The priority and MAC address of the bridge device used by the LAN segment connected to this port to reach the root of the spanning tree.
Designated Port	The port on the designated bridging device through which this switch must communicate with the root of the spanning tree.
Forward Transitions	The number of times this port has transitioned from the Learning state to the Forwarding state.

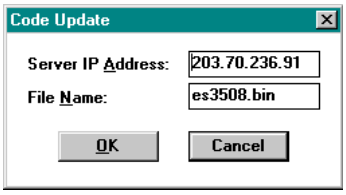
Viewing the Address Tables

Select *Address Table>Switch* to view all the addresses and corresponding ports recorded in the switch's global address table. Select *Address Table>Port* to view all the addresses associated with the selected port.

Parameter	Description
Time Since Last Reset	Time since this address table was last reset.
Number of Resets	Number of times this address table has been reset since the last power-on or system reset.
Total	Total number of addresses stored in this table.
Read Status	Indicates whether or not the SwitchHub Manager has finished reading addresses from the switch.
Address	The MAC address of a device associated with one of the switch ports.
Port	The port table containing this device address.

Rebooting the System

Select *Reboot...* under the Configuration Menu to restart the system agent. LEDs on the switch itself will light up sequentially as it executes the diagnostic test.



Downloading System Software

Use the *Code Update* command under the Configuration Menu to load available software updates into the agent's flash ROM. The download file should be a SwitchHub 3508 binary file from Accton Technology Corporation; otherwise the agent will not accept it.

Parameter	Description
Server IP Address	IP address of the TFTP server.
File Name	The binary file to download, which is located in the TFTP public directory (e.g., c:\ACCVIEW\PUBLIC).

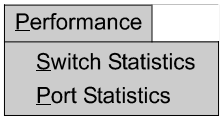
Enter the IP address of the TFTP Server that has the file you want to download, enter the name of the file, and press *OK*. After downloading the new software, the agent will automatically restart itself.

If the download file is located on the same machine you running AccView on, you can access the TFTP Server directly from the Program Manager. Please refer to the AccView/Open User's Guide for more information.

Exiting the System

Select *Exit* under the Configuration Menu to quit the SwitcHub Manager program.

Performance Menu



The Performance Menu displays statistics for the selected component. First select the component you want to access by highlighting the switch or any port. Then choose the corresponding command from the Performance menu. The variables displayed include for following items:

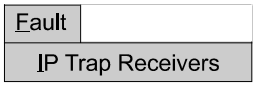
Variable	Device[1]	Description[2]
Received Local Frames	S,P	Number of frames confined to this segment and not forwarded.
Forwarded Frames	S,P	Number of frames forwarded to another segment.
Learning Broadcast Frames	S,P	Number of learning broadcast frames received on this port.
Long Frames	S,P	Number of times frame length has exceeded the maximum allowable size (i.e., 1518 bytes).
Short Frames	S,P	Number of frames less than 64 bytes long.
Frames Lost in Input Queue	S,P	Number of frames lost because the input queue is full.
Frames Lost in Output Queue	S,P	Number of frames lost because the output queue is full.
Frames in Input Queue	S,P	Number of frames in the input queue.
Frames in Output Queue	S,P	Number of frames in the output queue.
Currently Active Stations	S,P	Number of entries in the address table (i.e., the sum of all stations listed by this port, regardless of whether they belong to the local segment or to another segment).
Collisions	P	Number of simultaneous node transmissions detected by this port.
CRC Errors	P	Number of Ethernet Cyclic Redundancy Check errors detected by this device.

1 - Device: S - switch, P - port

2 - Description - The values displayed have been accumulated since the last system reboot or counter reset.

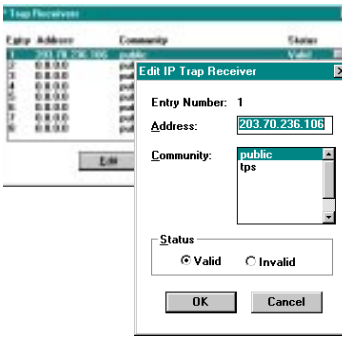
Note: Double-clicking on the switch or any port brings up the corresponding statistics dialog box.

Fault Menu



The Fault Menu is used to define IP management stations authorized to receive trap messages from the stack's on-board management agent. These stations will receive trap messages as defined in MIB II (RFC 1215), the Bridge MIB (RFC 1493), and Accton's private MIB.

Setting IP Trap Receivers



Select *IP Trap Receivers* from the Fault Menu. This dialog box is used to define management stations that can receive trap messages from the stack.

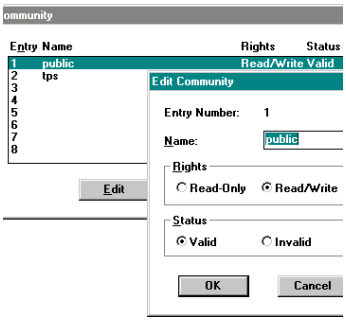
To define IP trap receivers,

1. Select any available entry from the list (i.e., Invalid).
2. In the Edit dialog box, specify the IP address of a management station and select a community string.
3. Check *Valid* in the Status field and press *OK* to close the Edit IP Trap Receiver dialog box.
4. Then press *Close* to exit the trap receiver window.

Security Menu

The Security Menu is used to monitor and control device access to the stack's management agent with community strings.

Setting Community Strings



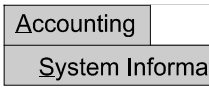
Select *Community* from the Security Menu. This dialog box is used to define SNMP community strings.

To define a community string,

1. Select any available entry from the list (i.e., Invalid).
2. In the Edit dialog box, specify a community string in the Name field
3. Select the access rights as Read/Write or Read-Only.
4. Check *Valid* in the Status field and press *OK* to close the Edit Community dialog box.
5. Then press *Close* to exit the community window.

Note: The default community string is *public.*

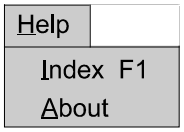
Accounting Menu



The Accounting Menu is used to display a basic description of the stack for identification purposes. This menu is also used to specify the person responsible for maintaining the stack, as well as the name and location of the stack itself.

Variable	Description
Description	Name and version of the SwitchHub software
System ID	Object identifier as defined in MIB II
MAC Address	Hardware address assigned to the stack
Interface Type	Interface chip used to connect the ports to the network
System Up Time	Length of time the management agent has been running
Contact	Contact person for the system
Name	Name assigned to the SwitchHub system
Location	Specifies the area or location where the system resides
Services	Specific services provided for the 7-layer network protocol

Help Menu



The Help Menu provides two functions. Select *Index* to display on-line help messages for AccView Hub Manager commands; or select *About* to display version number and copyright information about the SwitcHub Manager.

Getting Help

Use the *Index* command from the Help Menu to access on-line help, if necessary.

To use Help,

1. Click *Help/Index* to open SwitcHub Manager's help window.
2. Click on any underlined item in the help window to display on-line information

Tip Pressing the <F1> function key will also bring up the SwitcHub Manager's on-line help screen.

About the SwitcHub Manager

Use the *About* command from the *Help Menu* to display copyright and version information about the SwitcHub Manager.

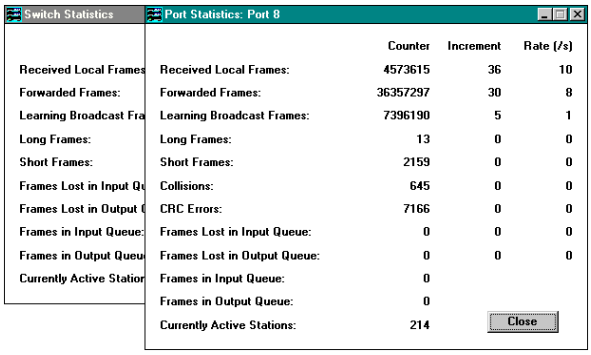
To use About,

1. Click on *Help/About* in the SwitcHub Manager's main menu to display the SwitcHub About dialog box.
2. Click *OK* or press *Enter* quit this dialog box.

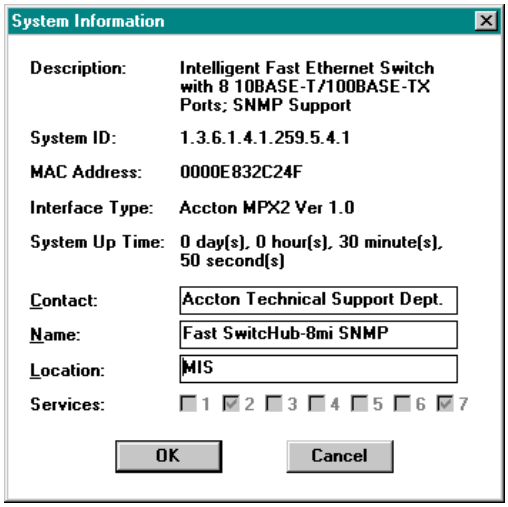
Appendix A: Managing Network Problems

Basic Information *A-2*
Common Network Problems *A-2*

This chapter describes several common network problems that can be identified using the SwitchHub Management program. Network statistics on the overall switch or any port can be viewed for the Fast SwitchHub-8mi. The network manager can examine statistical variables indicating the current traffic flow through the switch, and determine if the input and output buffers are adequate for the current network configuration and loading.



Screen shows switch and port statistics.



*Screen shows **system information**.*

Basic Information

This section describes basic information you can get from the SwitcHub Manager's statistical displays and information dialog boxes.

System Uptime

The duration the agent has been operational. This information may be found by selecting *System Information* from the Accounting Menu.

MAC ID

This is a unique identifier for each network interface (normally provided by the adapter card). Manufacturers are assigned a MAC address range by IEEE, within which each network adapter is assigned a unique address. The MAC ID for any device connected to a SwitcHub port can be found in the switch and port address tables. Highlight the switch or a port, and then select *Switch* or *Port* from the Address Table submenu.

Common Network Problems

The SwitcHub Manager provides information on common errors that occur in Ethernet traffic. By examining each statistic, you can get clues on the general "health" of your network.

Collisions

Two or more devices are transmitting at the same time. This is normal behavior for an Ethernet network. However, if there are excessive collisions, then the network has become overloaded.

Most Likely Cause: Excessive collisions may result from crosstalk (on 10BASE-T). To fix crosstalk, check for defective, low quality cables. To fix reflections, check for defective or impedance mis-matched cables.

Other Causes: Too many devices on the network.

Threshold: Collision count should be less than 1%.

Number of Collisions/Good Frames < 0.01,
where Good Frames is generally the sum of Forwarded, Local and Broadcast frames.

User Indications: During busy periods, the network may periodically appear to be "slow." On an average Fast Ethernet network, look for a collision rate above 200 per second.

CRC Errors

An internal error checking algorithm, cyclic redundancy check, verifies that the packet received is the same as the packet sent. If an error is detected, the packet is dropped.

An unusually high number of CRC errors may be an early indicator of serious problems. For example, intermittent periods of excessive CRC errors may show signs of a potential jabbering port. Monitor the ports with excessive errors and replace them before the port needs to be taken out of service.

Most Likely Cause: Originating device's network interface card has generated a corrupted frame.

Other Causes: A network hub or switch may be corrupting packets.

Threshold: For Fast Ethernet, CRC errors should be less than 100 per hour.

Number of CRC errors < 100 (per hour)

User Indications: If a CRC error is not detected, this could lead to data corruption. On an average Fast Ethernet network, look for a CRC rate above 100 per second.

Long Frames

This error occurs when frame length exceeds the maximum frame size of 1518 bytes.

Most Likely Cause: Network test device (e.g., Sniffer) interfering with normal data transmission.

Other Causes: Defective network interface card.

User Indications: Long Frames are reported under both switch and port statistics.

Short Frames

Short frames are normally just collision fragments, a normal network event. Short frames are common on busier networks. A short frame occurs when data transmission is less than the minimum frame length required for valid data (i.e., 64 bytes).

Most Likely Cause: Collisions caused by two or more nodes transmitting at the same time. If the number of short frames is high, there may be too many stations connected to a port.

Other Causes: Network interface card or switch may be corrupting packets. Cable lengths may be too long. Monitor traffic between the two farthest nodes on the net; or alternately, watch the two ports which have the highest number of short frames. Short frames may also result when network software violates the standards for frame length.

User Indications: Short frames are reported under both switch and port statistics.

Configuration Performance

Some of the entries provided in the statistics table can only be properly interpreted by taking into consideration the specific network configuration (i.e., devices attached to the switch and its ports). Moreover, statistics involving frames may be difficult to intrepret because frame size can vary greatly for different network applications. In general, when you examine port statistics, take note of which ports have a large number of attached stations, which provide dedicated access to a single end-node device, and which are cascaded to other internetworking devices such as another switch or hub.

Frames in Queue

If flow control has been enabled, then the number of frames in the input queue should remain within reasonable bounds for any configuration. However, if flow control has been disabled and the number of frames in the input queue is consistently high, then you may have too many stations attached to the port (or the switch).

However, a consistently high number of frames in the input queue may also be caused if the output queue is backed up. If this is the case, then the network on the other side of the port is operating at a much slower speed, or is not well configured. You may need to invoke flow control or consider reconfiguring your network to better balance the load.

Frames Lost in Queue

Frames are lost if the queue overflows. When frames are lost, higher level protocols must retransmit, which slows down throughput and adds to the overall load. The number of frames lost in the queues should be very low for most applications.

Using flow control can reduce the number of frames lost in the queues, but does nothing to speed up traffic.

If you are experiencing a large number of lost frames, you should carefully examine the network configuration to be sure the load is adequately balanced. You may also want to examine the traffic with a Sniffer to see if specific applications may be flooding the network.

Learning Broadcast Frames

When traffic is sent to an unknown destination, a broadcast frame is sent. Where switch ports are connected to a small and stable network, the number of Learning Broadcast Frames will be small. However, when a switch port is connected to a larger network, the number of these frames tend to be large. Address tables are only designed to contain addresses for the devices most frequently accessed. Therefore, the number of broadcast frames seen on the network should remain fairly stable over time, and is only a rough indication of network configuration.

Received Local Frames and Forwarded Frames

The ratio of received local to forwarded frames depends on your specific network configuration. If you are trying to isolate most of the traffic within the segment attached to a port on the switch, then the number of received frames should far exceed that of forwarded frames. However, if you have dedicated a switch port to service a single end-node device, then the number of received local frames will be almost null (one or two frames will be used for hardware testing), while the number of forwarded frames will be a direct indication of the amount of traffic produced by the attached device.

Glossary

ACCVIEW
AccView is Accton's network management platform. AccView is composed of a core program and group of related modules. AccView/Open is Accton's complete network management product with modules for managing Accton and third-party SNMP devices.

ADDRESS
Identification of entities in a communication protocol.

BROADCAST FRAMES
A frame transmitted to all nodes attached to the network.

COLLISION
An attempt by two or more nodes to gain access to a CSMA/CD network at the same time.

COMMUNITY
A character string embeded in SNMP messages that is used to authenticate the access rights of the service requester.

CRC ERROR
Error that occurs when the frame's Frame Check Sequence does not match the Cyclic Redundancy Check, an error-checking algorithm the receiving station uses to indicate frame reception errors.

DOWNLOAD
The process of loading a program file into device memory.

ETHERNET
A 10 Mbps baseband LAN that uses a bus configuration and CSMA/CD.

ETHERNET FRAME
A packaging structure for Ethernet data and control information. It consists of the destination address, source address, field length, data, pad and frame check sequence. The 802.3 Standard specifies that the minimum size data frame is 64 bytes and the maximum size data frame is 1518 bytes.

FAST ETHERNET
100 Mbps network communication system based on Ethernet and the CSMA/CD access method. Fast Ethernet generally includes the definition for auto-detection of transmission speed at 10 or 100 Mbps, and auto-negotiation of transmission mode at half or full duplex.

FRAMES
A unit of data between 64 and 1518 bytes used in Ethernet transmissions. It includes a preamble, data, and end of packet marker. The 100BASE-TX frame is basically the same as that used in 10BASE-T, except for a few minor differences.

GATEWAY
A synonym for router in internet protocol (IP). A gateway connects several IP networks. It builds a routing database by exchanging information with other gateways or with information input by the network administrator. It relays IP data packets over connected networks using the destination IP address in the data packet and its own routing database.

IN-BAND
Communicating with a network device over standard network channels.

INTERNET
A large collection of connected networks running the Internet suite of protocols. Previously referred to as the DARPA Internet, NSF/DARPA Internet, or the Federal Research Internet.

INTERNET PROTOCOL
The network layer protocol offering connectionless-mode network service in the Internet suit of protocols.

INTERNET SUITE OF PROTOCOLS
A collection of computer-communication protocols originally developed under DARPA sponsorship. The Internet suite of protocols is currently the de facto solution for open networking.

IP ADDRESS
A 32-bit quantity representing a point of attachment in an Internet. It is usually represented by four 8-bit integers separated by dots. Each decimal integer represents a byte in an IP address. The IP address is divided into a network part and a host part. For example, 192.9.211.151.

LOCAL AREA NETWORK (LAN)
A group of interconnected computers and other devices.

MAC ADDRESS
Media Access Control address that represents a unique physical address for each port in a local area network.

MIB
An acronym for Management Information Base. It is a set of objects that contains information about the device. Note that MIB II and the SwitcHub MIB are simply subordinate components of the overall MIB.

NETMASK
The netmask divides a network into logical subnets. This number uses a binary representation to include or exclude addresses. For example, these netmasks correspond to various internet classes:

Class A: 255.0.0.0
Class B: 255.255.0.0
Class C: 255.255.255.0

NETWORK MANAGEMENT AGENT OR MODULE
An implementation of Network Management Protocol which exchanges network management information with a network management station.

NETWORK MANAGEMENT STATION
The computer using software (such as AccView) to manage the network.

NETWORK MAP
A file that illustrates the network configuration.

OUT-OF-BAND
A way of communicating with a network device from outside the standard network channels.

POLLING INTERVAL
The time interval at which the SwitcHub Manager polls each device. Change it by clicking the the up and down arrow before the indicated number.

PROTOCOL
A set of rules that allows computers to communicate with one another, specifying the format, timing, sequencing, and error-checking for data transmission.

SNMP
Simple Network Management Protocol (SNMP). The application protocol offering network management services in the Internet suite of protocols.

SNMP AGENT
A device or resident software that can respond to SNMP messages using a Management Information Base (MIB). The MIB contains information for that device.

SUBNET
A network segment, identified by a portion of the Internet address, which may be reached through a gateway.

SUBNET MASK
See Netmask.

TFTP
Trivial File Transfer Protocol. A file transfer protocol commonly used for downloading system software to network devices.

TIME-OUT INTERVAL
The elapsed time (in seconds) that AccView waits for a response from a device.

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